

Effect to determine the likely speech levels. The Lombard Effect is the phenomenon that when people are exposed to noise their speech changes and becomes generally becomes louder. If no adjustment is made for the Lombard Effect in an automatic speech recognition system there will be a mismatch between the level of the speech to be recognised and the expected level. In principle, this could be corrected by observing the speech level and adjusting the gain of an amplifier in the recogniser to compensate for the variation in level. However, in some circumstances this is not a practical arrangement. For example, in a car the noise level can change from one utterance to another following changes in the speed of the car or in the road surface, or because a window is wound down. A gain setting based on the previous utterance will then be inappropriate. In some circumstances, it might be possible to wait until the utterance was complete, measure the speaking level, adjust the recorded utterance to normalise this level, and only then submit it to the recogniser. However, this process would introduce a delay in the response of the recogniser, which for many applications would be unacceptable.

In one aspect, this invention provides apparatus for predicting the speech level of a speaker exposed to an environment containing a variable level of ambient acoustic noise, the apparatus comprising means for measuring said ambient acoustic noise level, and processing means for using said measured acoustic noise level to predict the likely